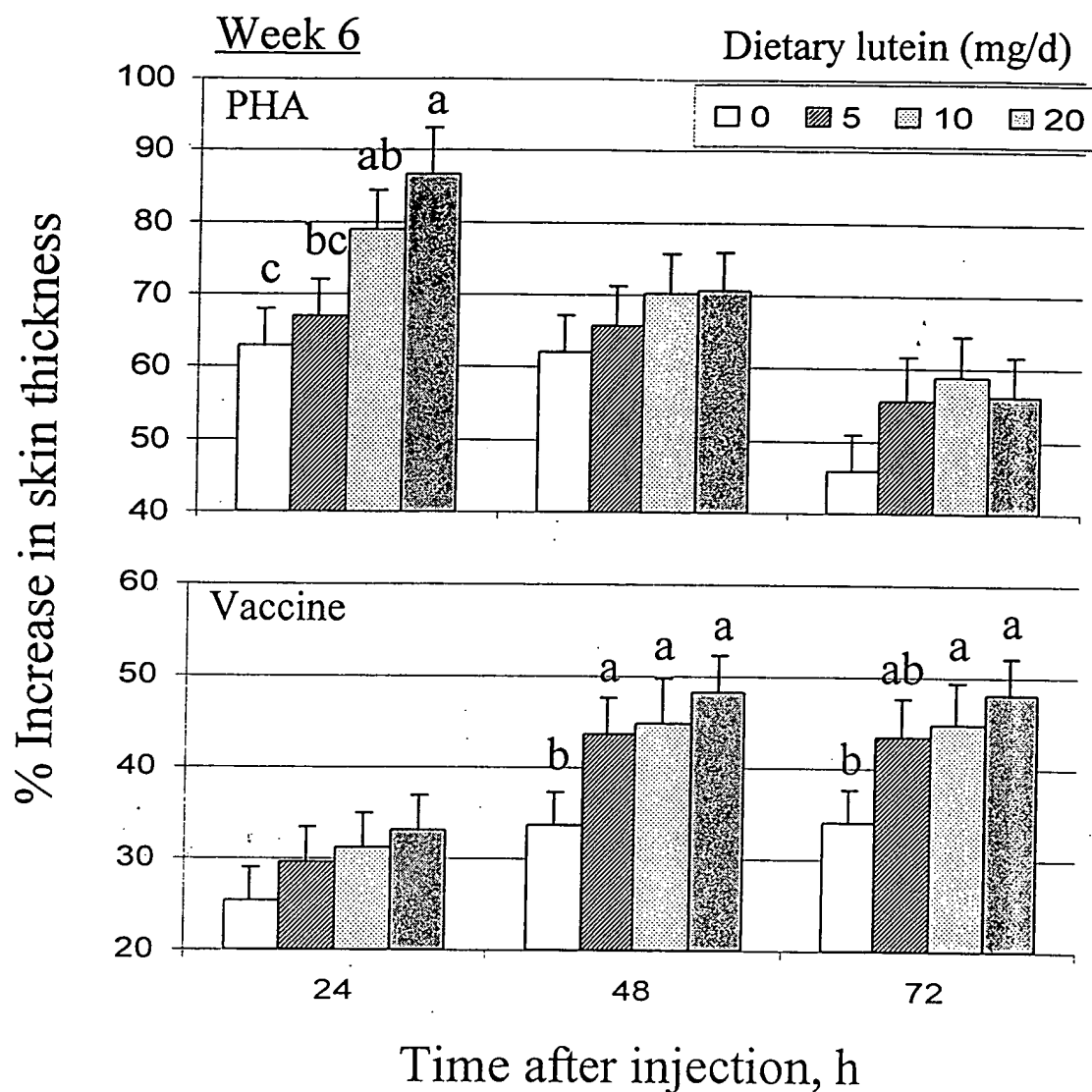
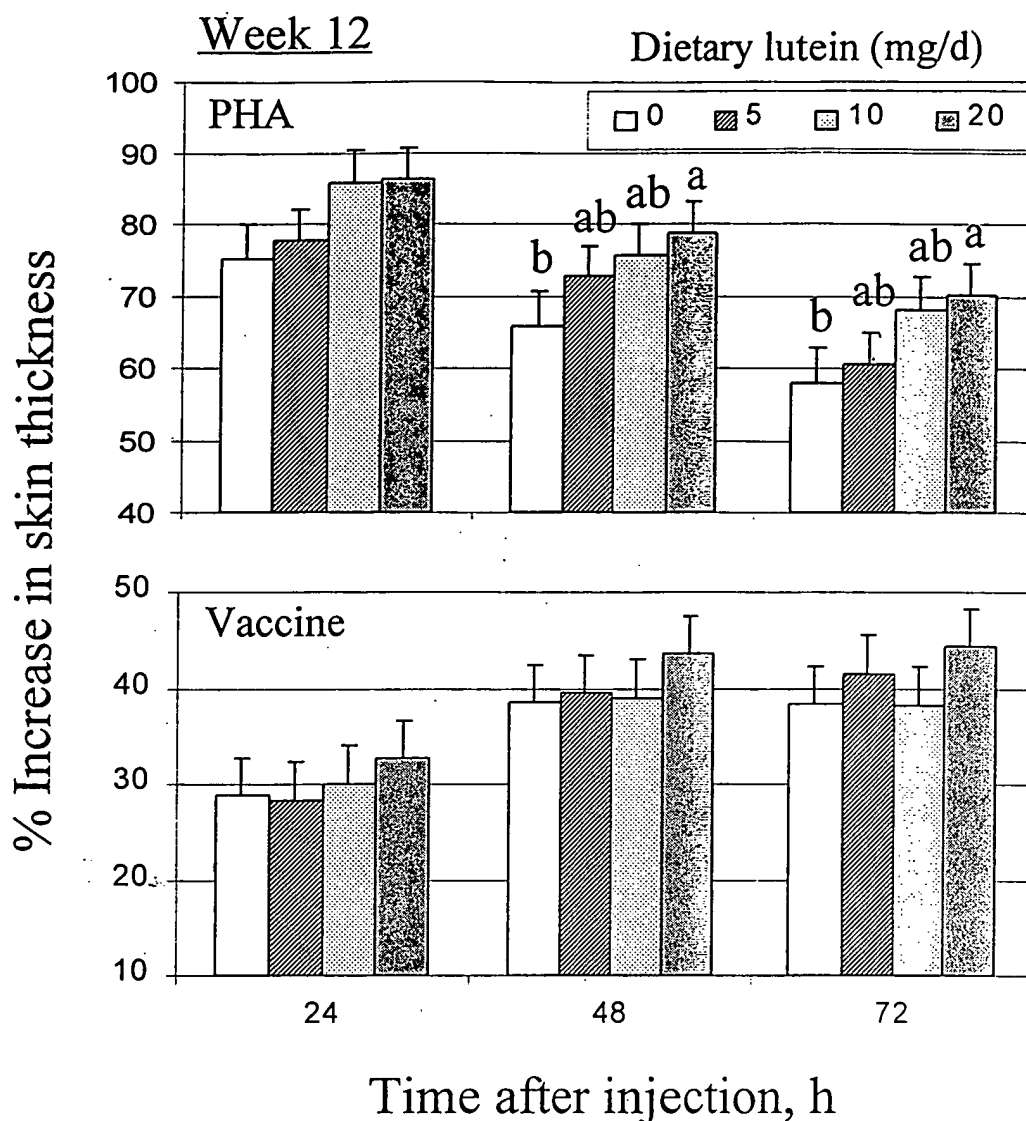


**Figure 1** Concentrations of plasma lutein + zeaxanthin in dogs fed diets containing 0, 5, 10 or 20 mg lutein for 12 wk. Values are means  $\pm$  SEM ( $n = 14$ ). Lutein + zeaxanthin was not detectable in unsupplemented dogs. Data were analyzed by repeated measures ANOVA. Means within a sampling period with different superscripts differ significantly,  $P < 0.05$ . nd = non-detectable.

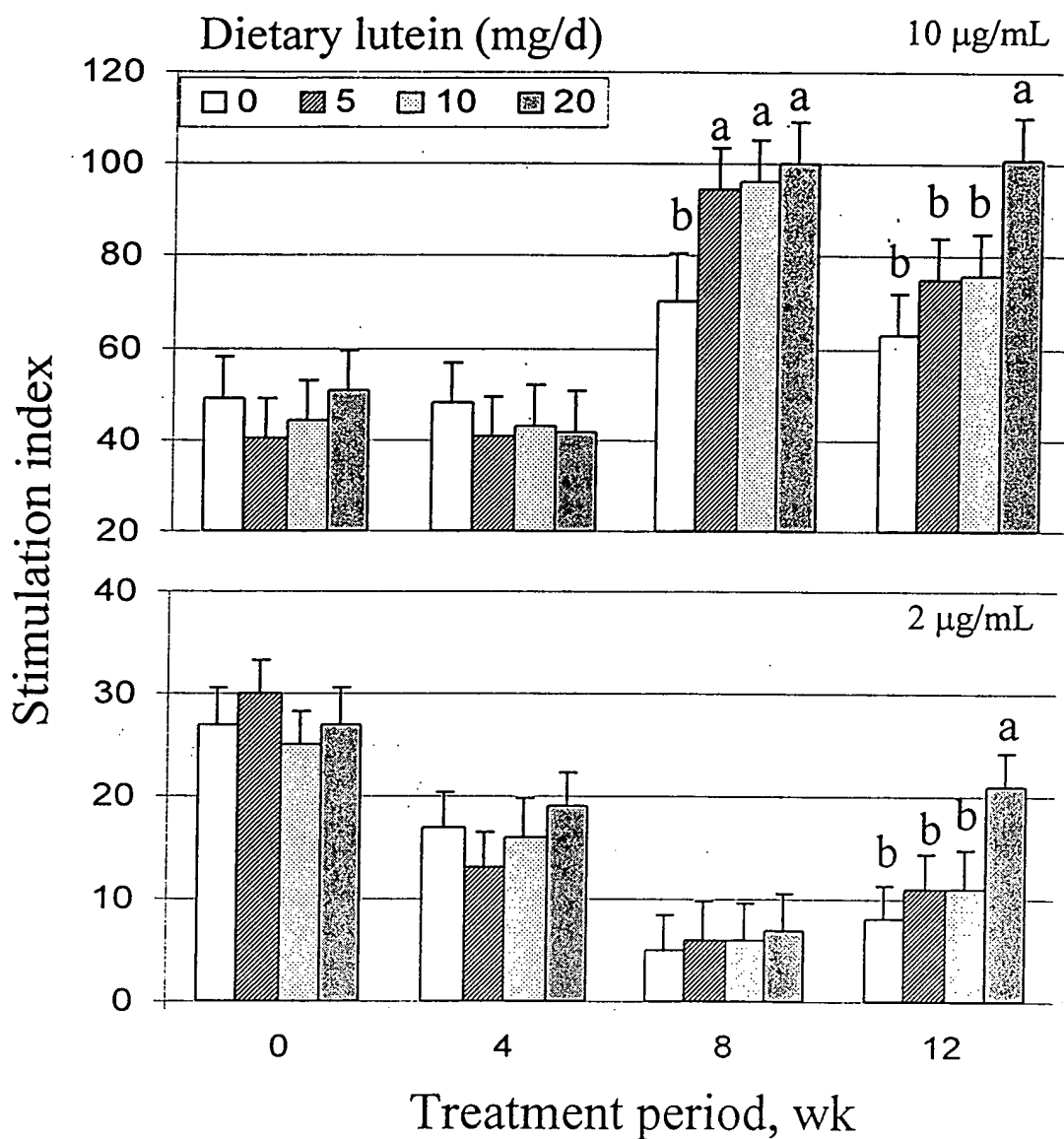


**Figure 2** Delayed-type hypersensitivity response (expressed as a percentage of skin thickness measured at 0 h) in dogs fed 0, 5, 10, or 20 mg lutein daily for 6 wk. Dogs were challenged with PHA (top panel) and a polyvalent vaccine (bottom panel) and skin induration was measured at 0, 24, 48 and 72 h post-injection. Values are means  $\pm$  SEM ( $n = 14$  dogs/diet). Data were analyzed by repeated measures ANOVA. Means within a sampling period with different superscripts differ significantly,  $P < 0.05$ .



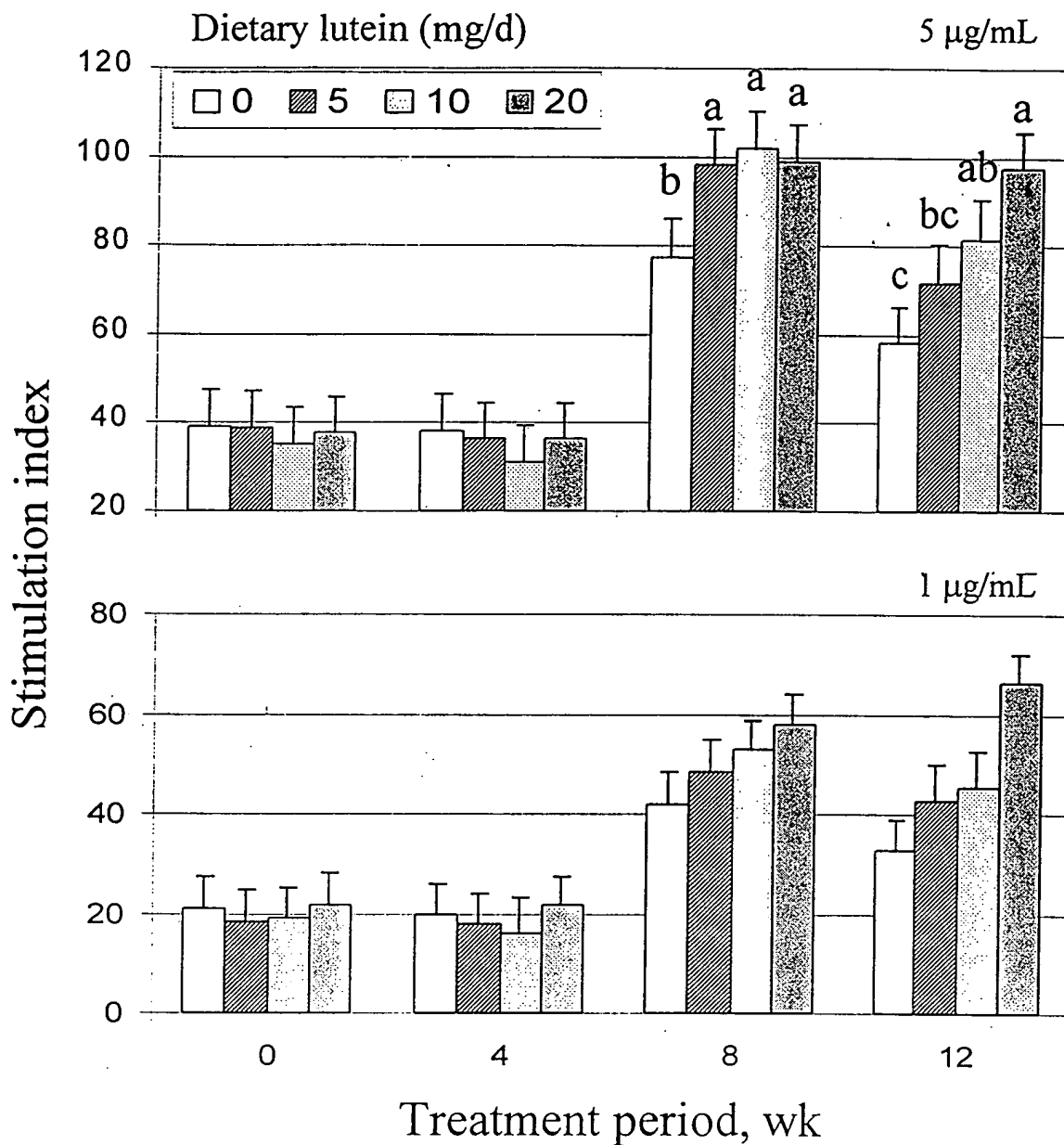
**Figure 3** Delayed-type hypersensitivity response (expressed as a percentage of skin thickness measured at 0 h) in dogs fed 0, 5, 10, or 20 mg lutein daily for 12 wk. Dogs were challenged with PHA (top panel) and a polyvalent vaccine (bottom panel) and skin induration was measured at 0, 24, 48 and 72 h post-injection. Values are means  $\pm$  SEM ( $n = 14$  dogs/diet). Data were analyzed by repeated measures ANOVA. Means within a sampling period with different superscripts differ significantly,  $P < 0.05$ .

## Phytohemagglutinin



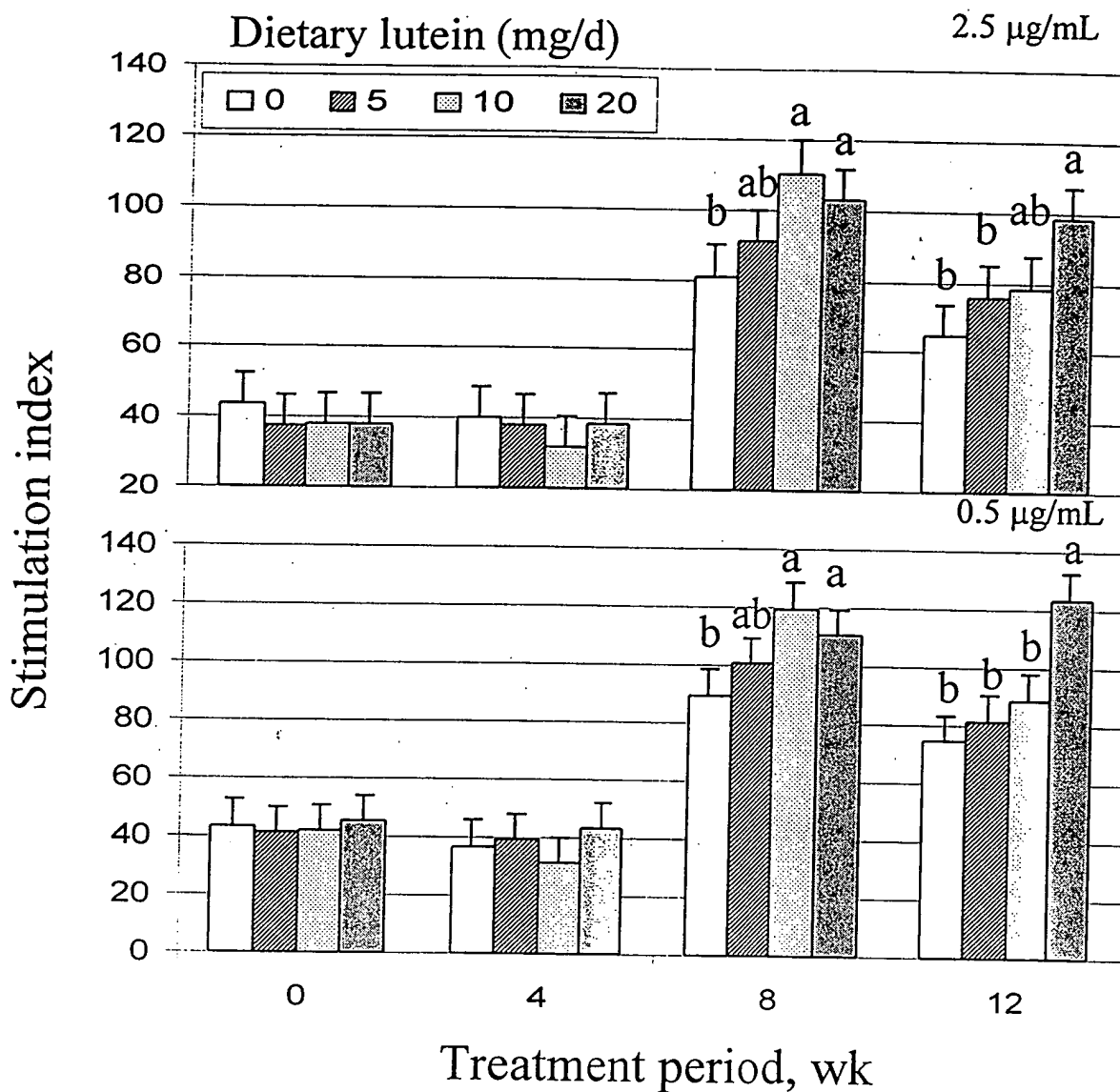
**Figure 4** Incorporation of [ $^3\text{H}$ ]-thymidine by PHA-induced (10 or 2 µg/mL) PBMC in dogs fed 0, 5, 10, or 20 mg lutein daily. Values are means  $\pm$  SEM ( $n = 14$  dogs/diet). Data were analyzed by repeated measures ANOVA. Means within a period with different superscripts differ significantly,  $P < 0.05$ .

## Concanavalin A

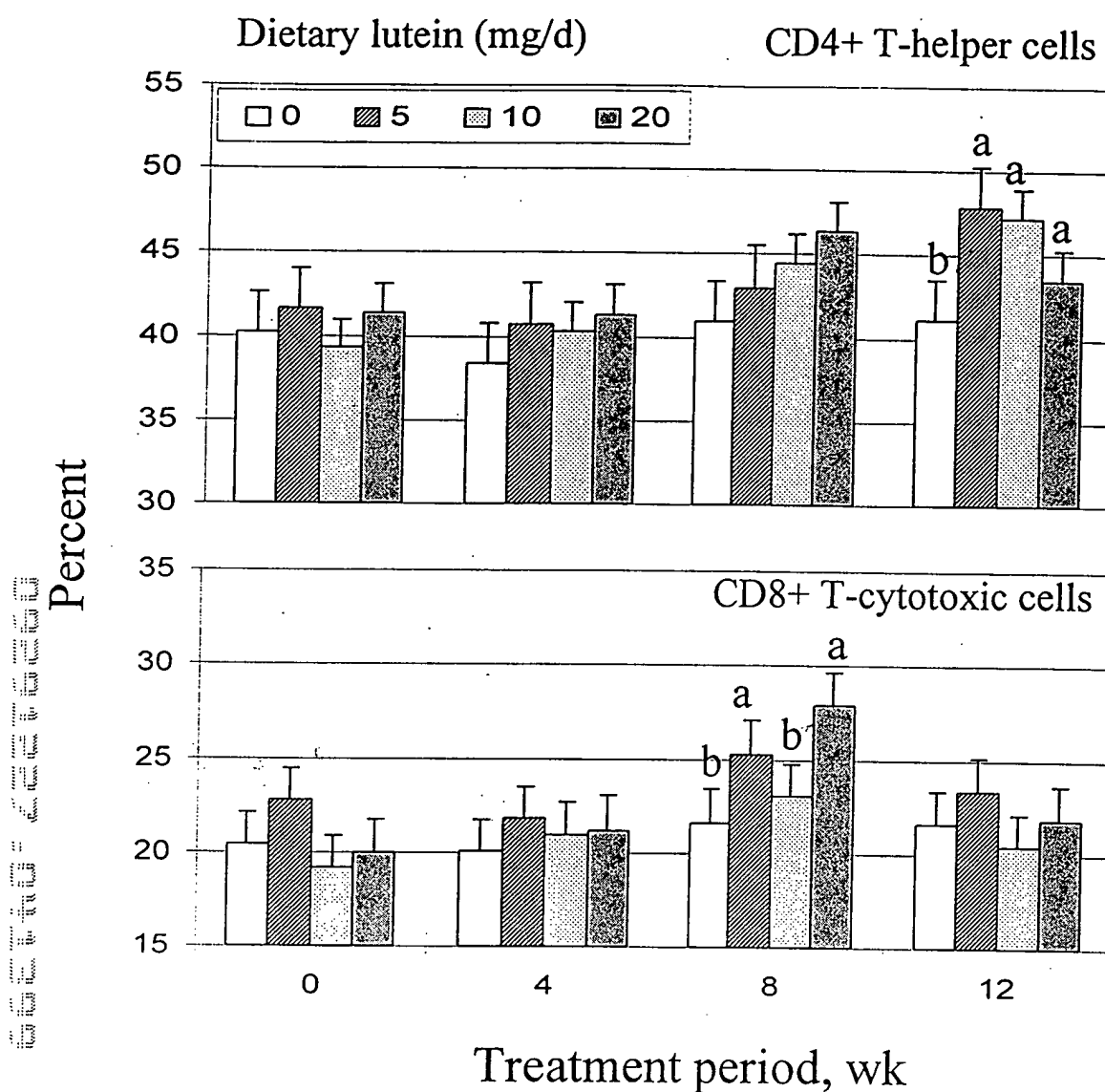


**Figure 5** Incorporation of [ $^3\text{H}$ ]-thymidine by Con A-induced (5 or 1 µg/mL) PBMC in dogs fed 0, 5, 10, or 20 mg lutein daily. Values are means  $\pm$  SEM ( $n = 14$  dogs/diet). Data were analyzed by repeated measures ANOVA. Means within a sampling period with different superscripts differ significantly,  $P < 0.05$ .

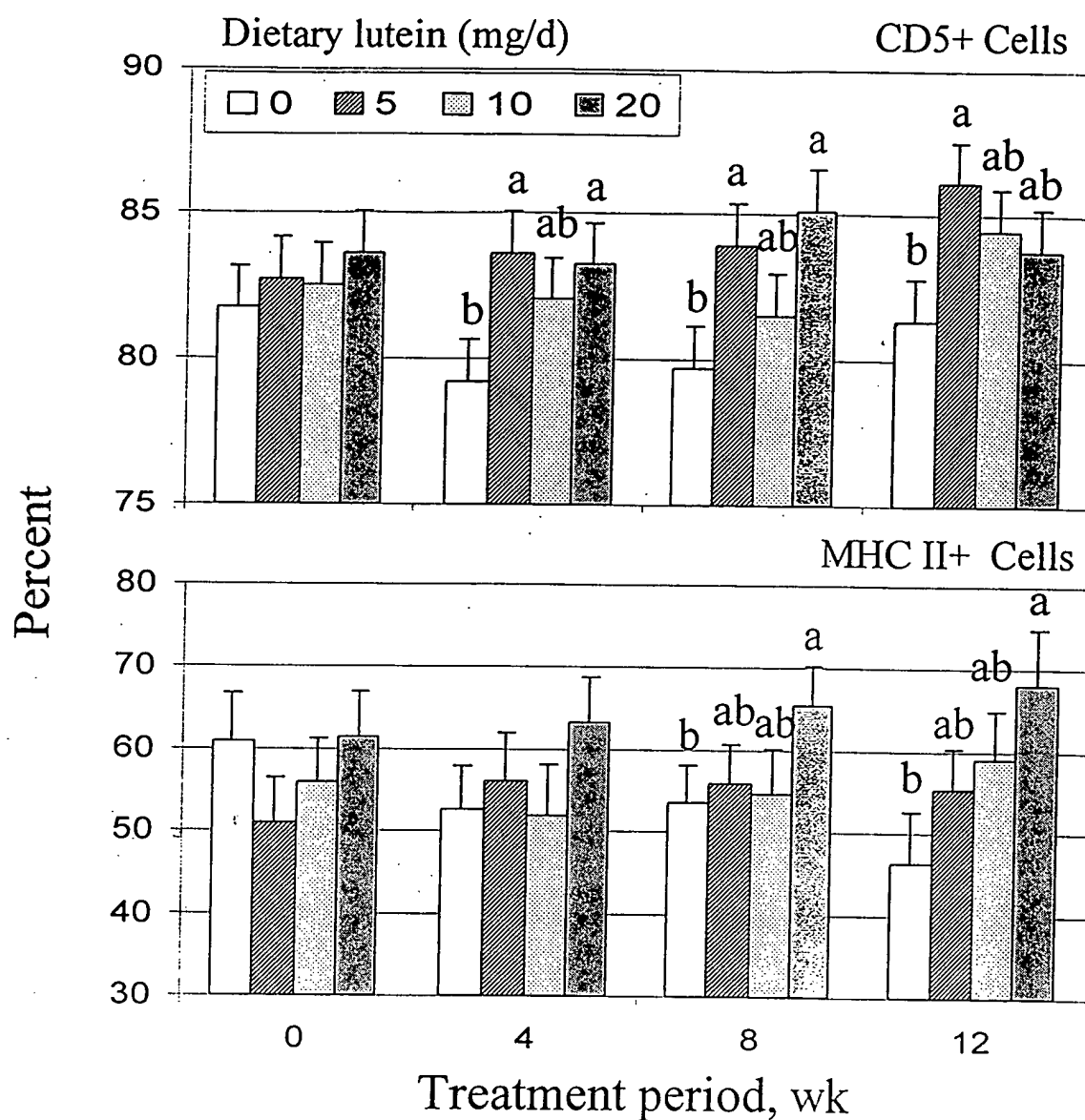
## Pokeweed Mitogen



**Figure 6** Incorporation of [ $^3\text{H}$ ]-thymidine by PWM-induced (2.5 or 0.5 µg/mL) PBMC in dogs fed 0, 5, 10, or 20 mg lutein daily. Values are means  $\pm$  SEM ( $n = 14$  dogs/diet). Data were analyzed by repeated measures ANOVA. Means within a period with different superscripts differ significantly,  $P < 0.05$ .

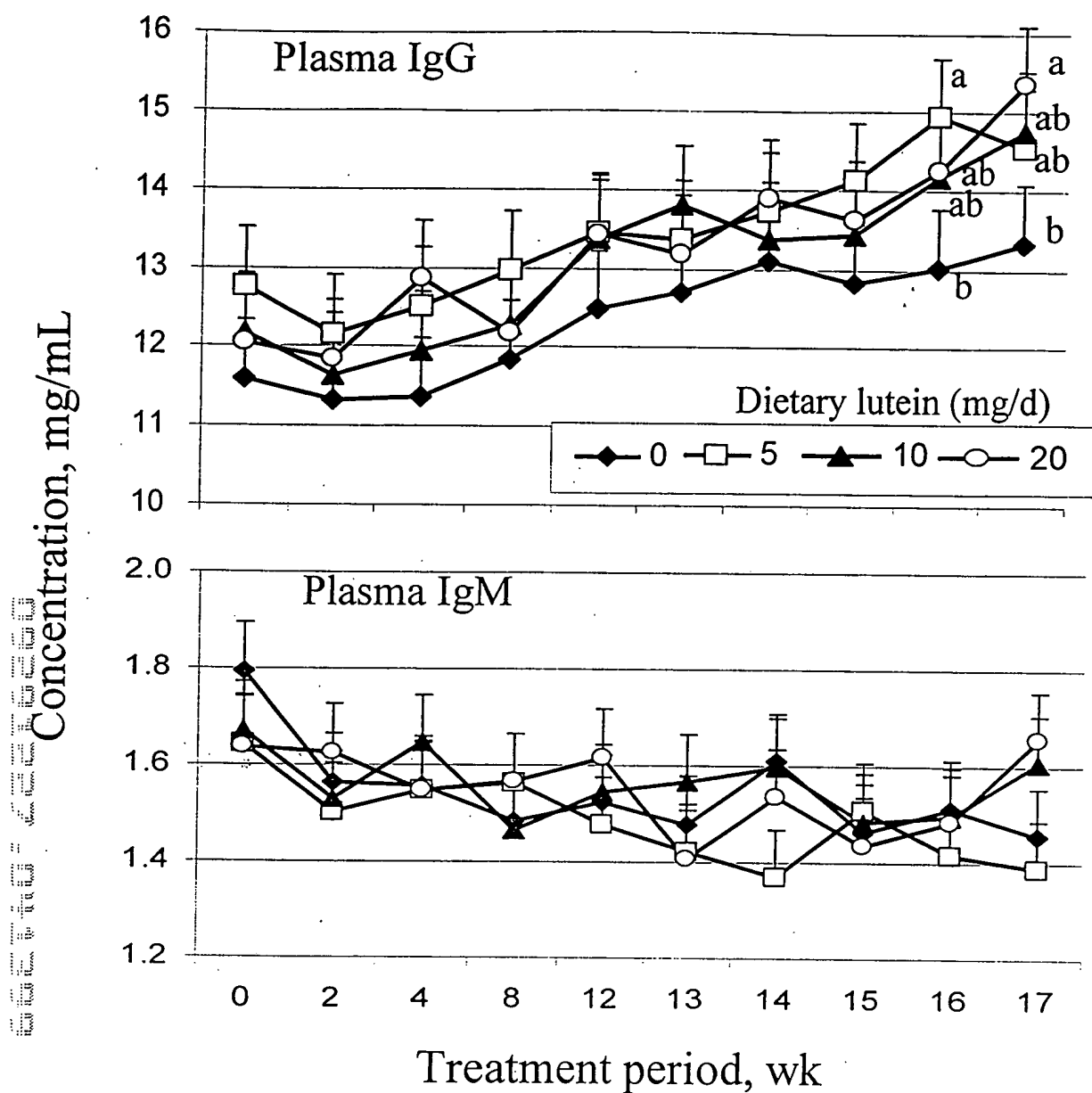


**Figure 7** Percentages (calculated by expressing the number of cells that stained positive for surface marker as a percentage of total number of lymphocytes) of CD4+ T-helper (above) and T cytotoxic/suppressor CD8+ (bottom) lymphocyte subpopulations in dogs fed 0, 5, 10, or 20 mg lutein daily for 12 wk. Values are means  $\pm$  SEM ( $n = 14$  dogs/diet). Data were analyzed by repeated measures ANOVA. Means within a sampling period with different superscripts differ significantly,  $P < 0.05$ .

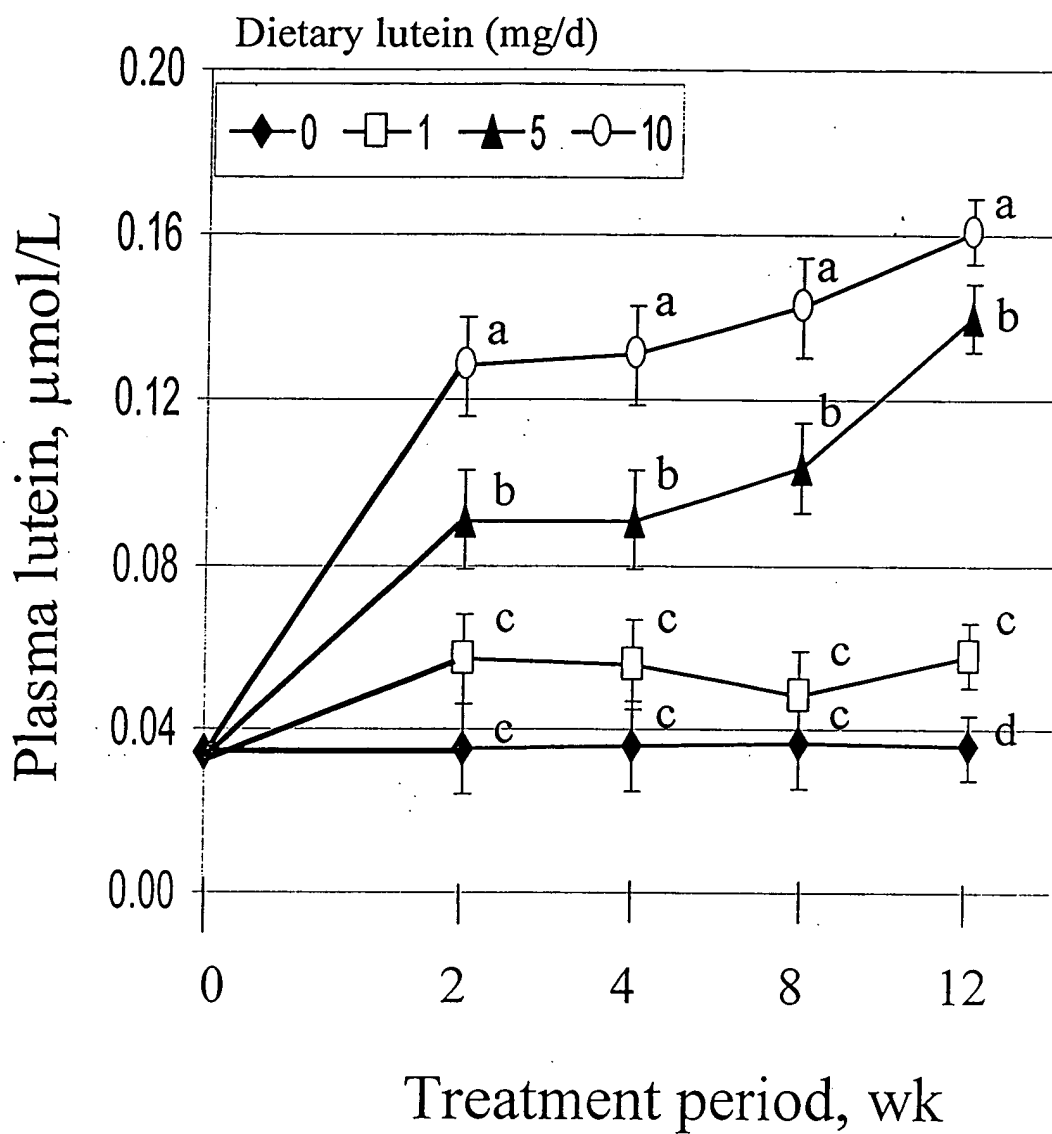


**Figure 8** Percentages (calculated by expressing the number of cells that stained positive for the cell surface marker as a percentage of total number of lymphocytes) of CD5 positive (above) and MHC class II positive (bottom) lymphocytes in dogs fed 0, 5, 10, or 20 mg lutein daily for 12 wk. Values are means  $\pm$  SEM ( $n = 14$  dogs/diet). Data were analyzed by repeated measures ANOVA. Means within a sampling period with different superscripts differ significantly,  $P < 0.05$ .

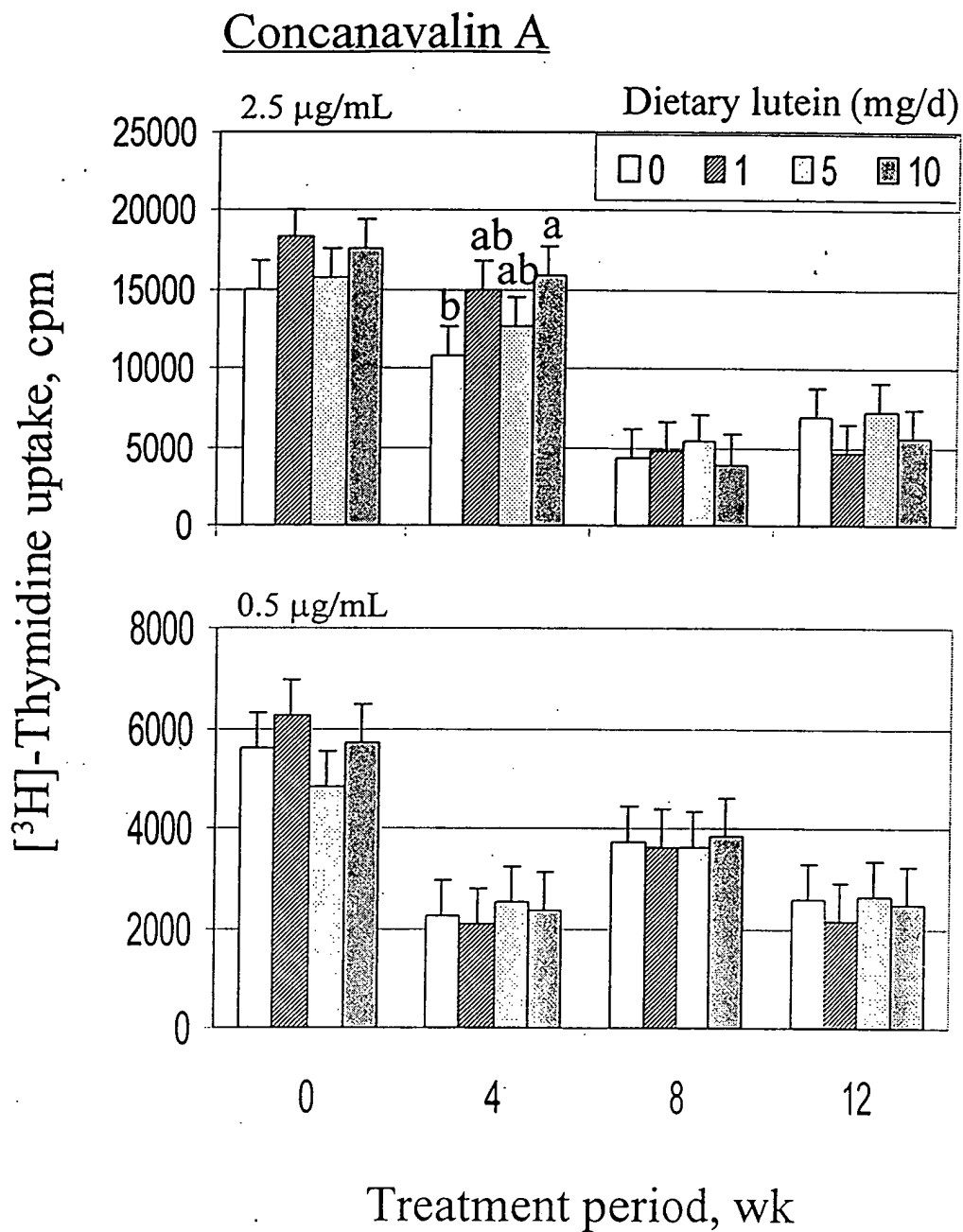




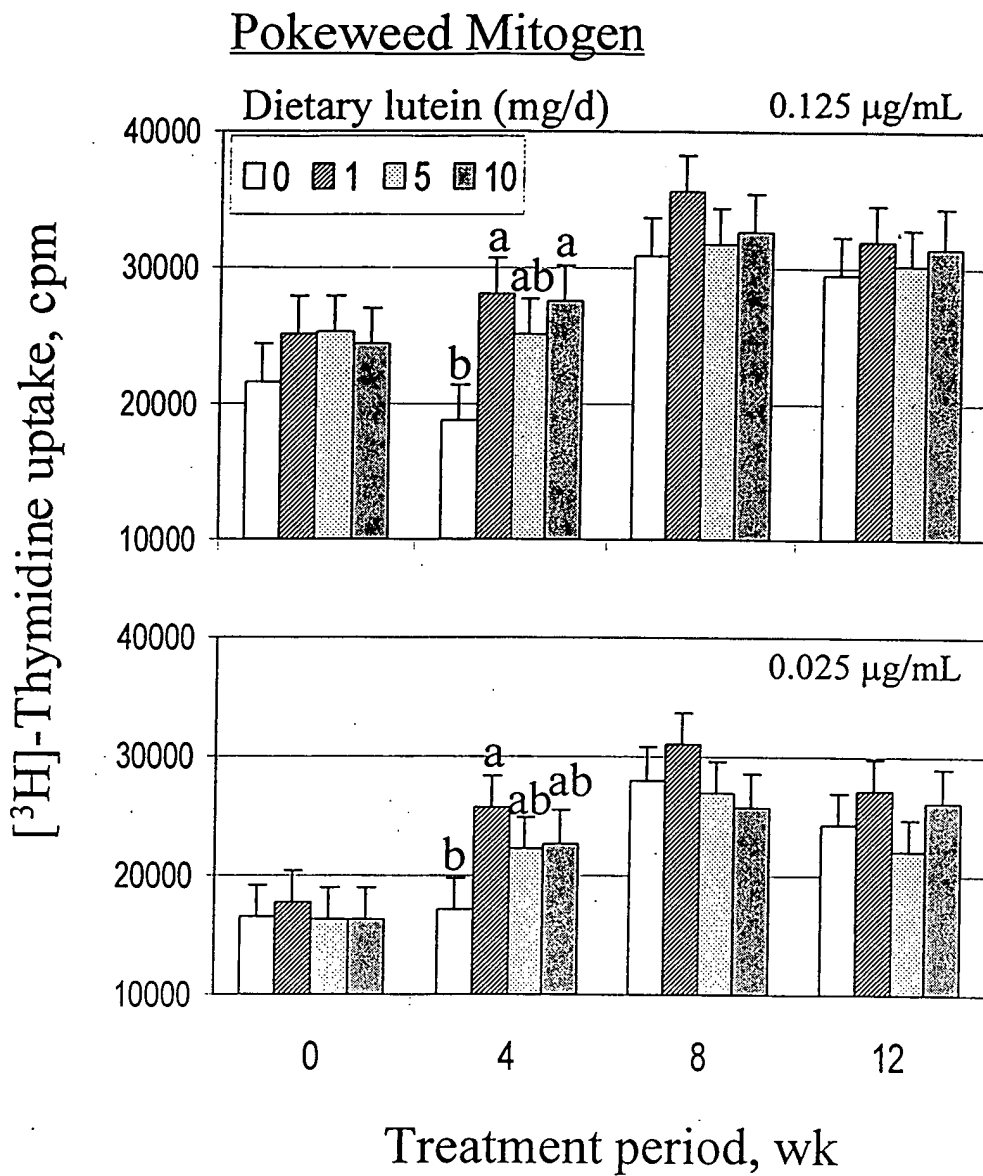
**Figure 9** Concentrations of plasma polyclonal IgG (above) and IgM (bottom) in dogs fed 0, 5, 10, or 20 mg lutein daily for 17 wk. All dogs were vaccinated with a polyclonal vaccine on wk 13 and 15. Values are means  $\pm$  SEM ( $n = 14$  dogs/diet). Data were analyzed by repeated measures ANOVA. Means within a sampling period with different superscripts differ significantly,  $P < 0.05$ .



**Figure 10** Concentrations of plasma lutein from cats fed diets containing 0, 1, 5 or 10 mg lutein for 12 wk. Values are means  $\pm$  SEM ( $n = 14$  cats/diet). Data were analyzed by repeated measures ANOVA. Means within a period with different superscripts differ significantly,  $P < 0.05$ .

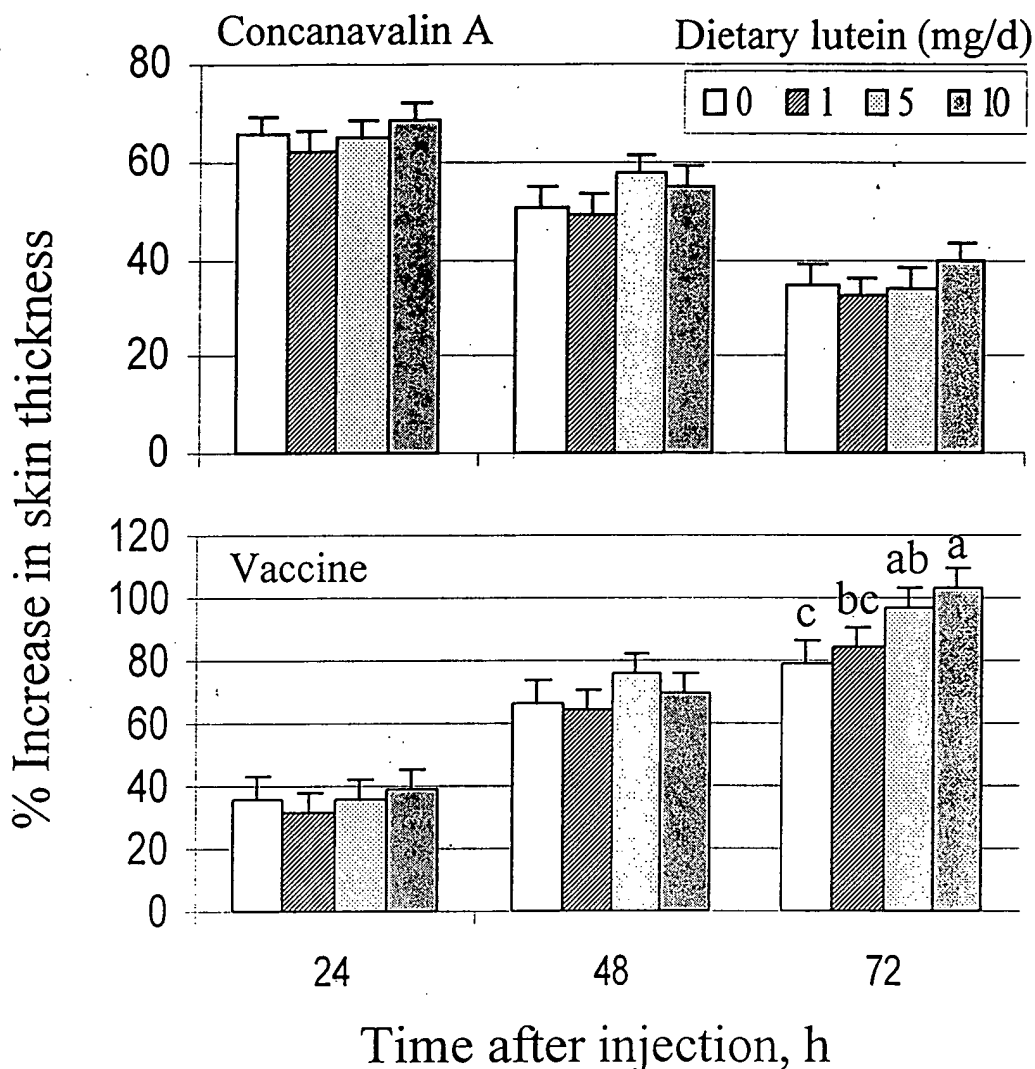


**Figure //** Incorporation of [<sup>3</sup>H]-thymidine by Con A-induced (2.5 or 0.5 µg/mL) PBMC from cats fed 0, 1, 5, or 10 mg lutein daily. Values are means ± SEM (n = 14 cats diet). Data were analyzed by repeated measures ANOVA. Means within a period with different superscripts differ significantly, *P* < 0.05.

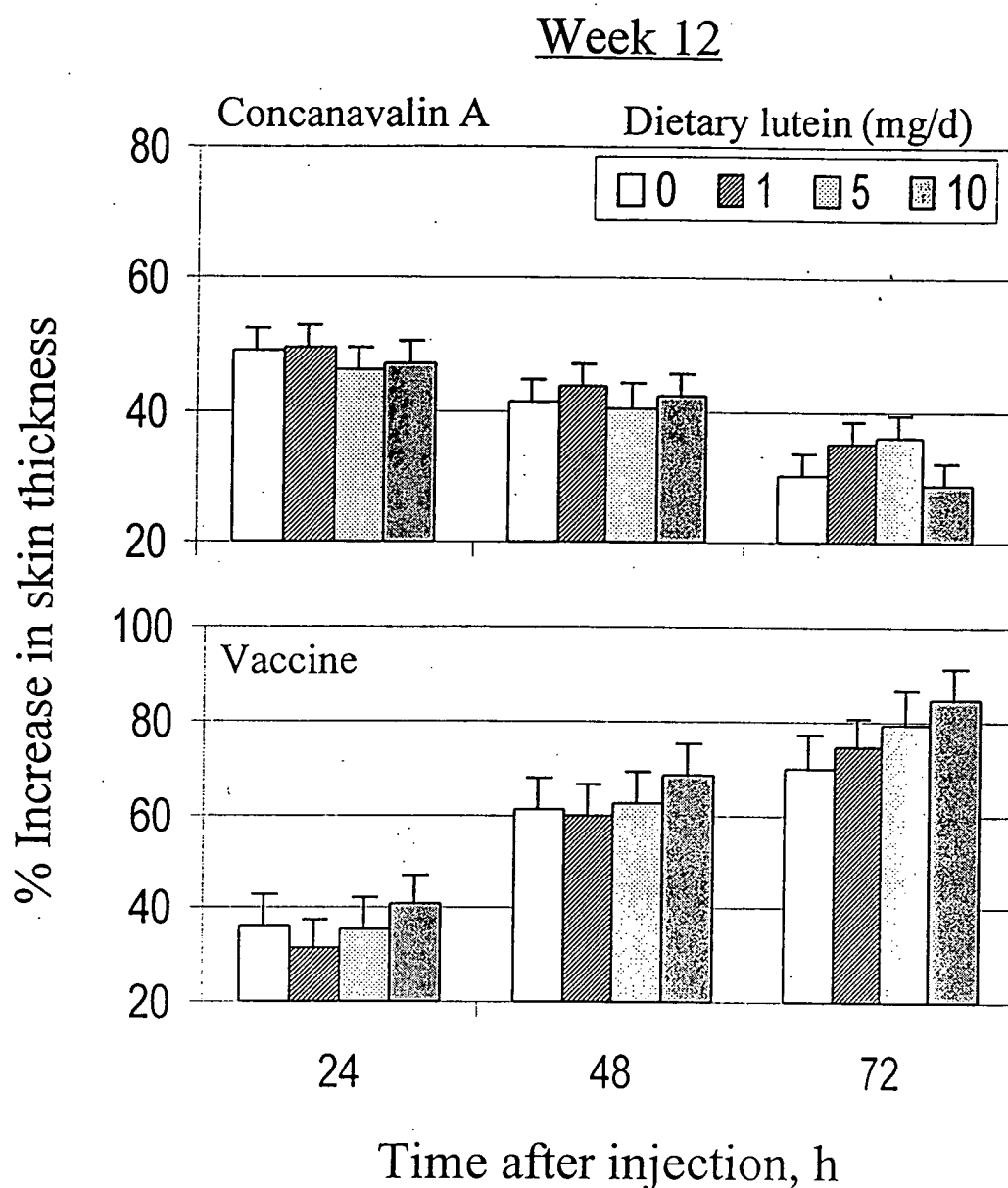


**Figure 1** Incorporation of [<sup>3</sup>H]-thymidine by PWM-induced (0.125 or 0.025 µg/mL) PBMC from cats fed 0, 1, 5, or 10 mg lutein daily. Values are means ± SEM (n = 14 cats/diet). Data were analyzed by repeated measures ANOVA. Means within a period with different superscripts differ significantly, *P* < 0.05.

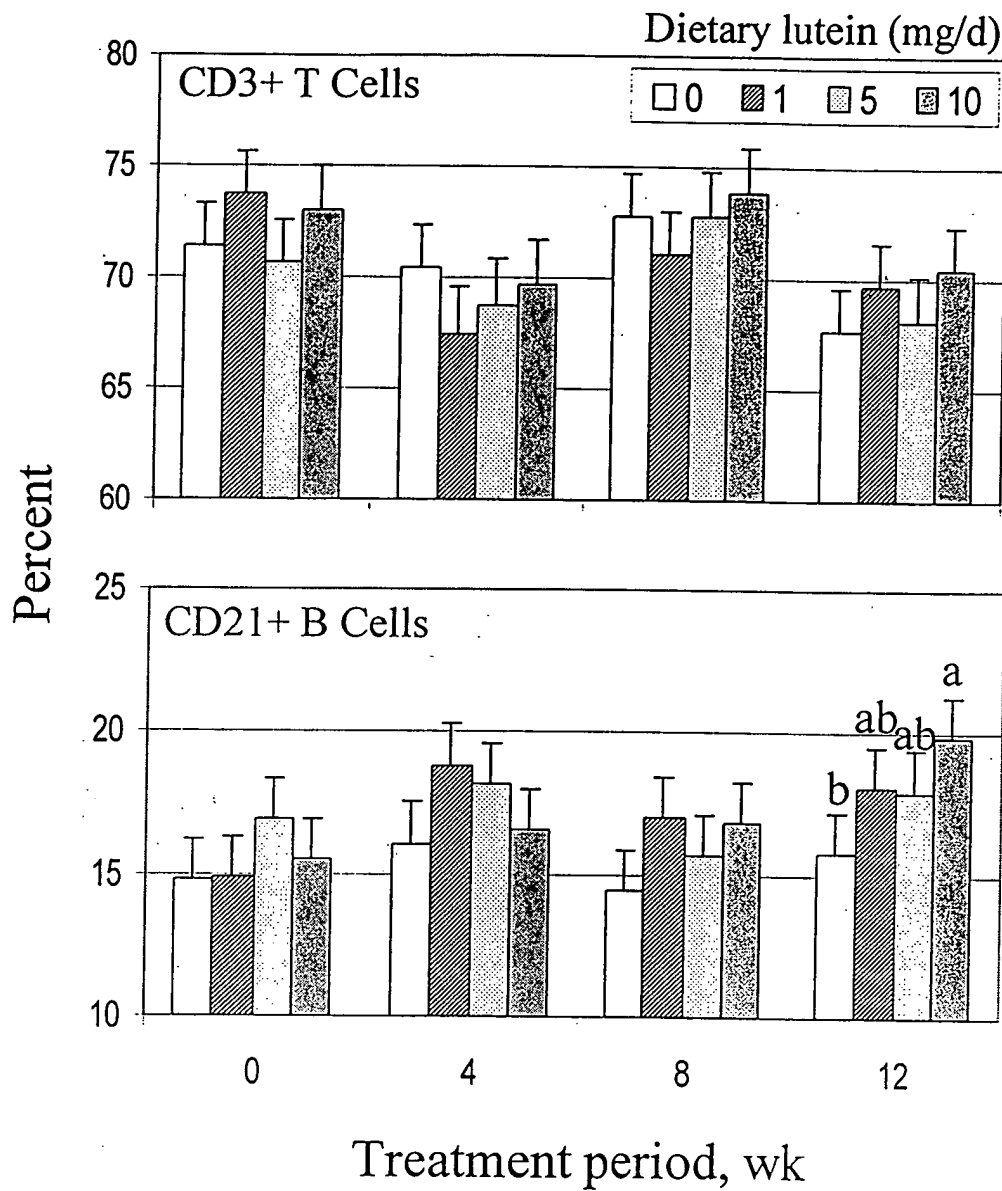
## Week 6



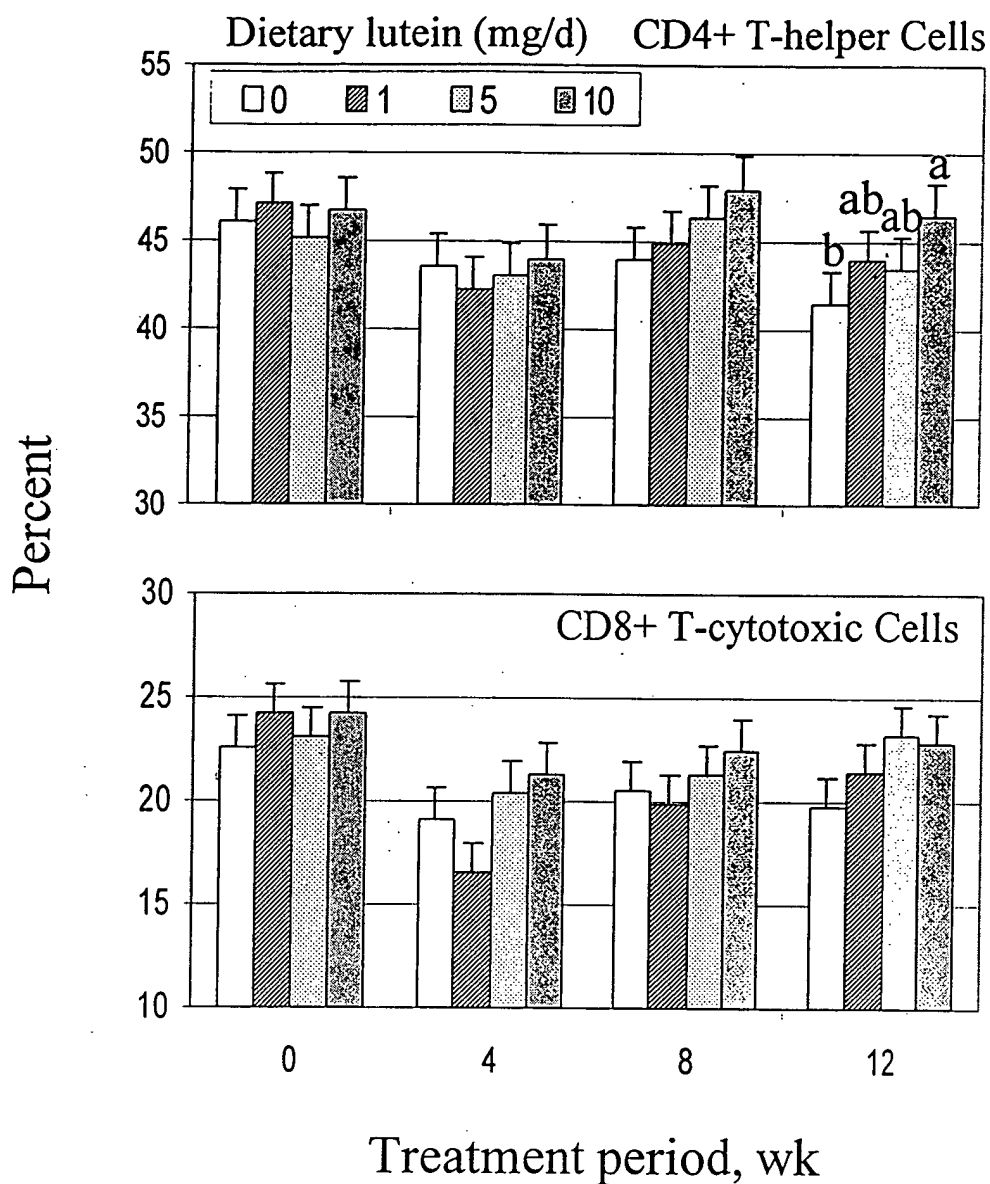
**Figure 13** Delayed-type hypersensitivity response (expressed as a percentage of skin thickness measured at 0 h) in cats fed 0, 1, 5, or 10 mg lutein daily for 6 wk. Values are means  $\pm$  SEM ( $n = 14$  cats/diet). Data were analyzed by repeated measures ANOVA. Means within a sampling period with different superscripts differ significantly,  $P < 0.05$ . Cats were challenged with Con A (top panel) and a polyvalent vaccine (bottom panel) and skin induration measured at 0, 24, 48 and 72 h post-injection.



**Figure 14** Delayed-type hypersensitivity response (expressed as a percentage of skin thickness measured at 0 h) in cats fed 0, 1, 5, or 10 mg lutein daily for 12 wk. Values are means  $\pm$  SEM ( $n = 14$  cats/diet). Data were analyzed by repeated measures ANOVA. There was no significant difference among treatments at all sampling periods. Cats were challenged with Con A (top panel) and a polyvalent vaccine (bottom panel) and skin induration measured at 0, 24, 48 and 72 h post-injection.

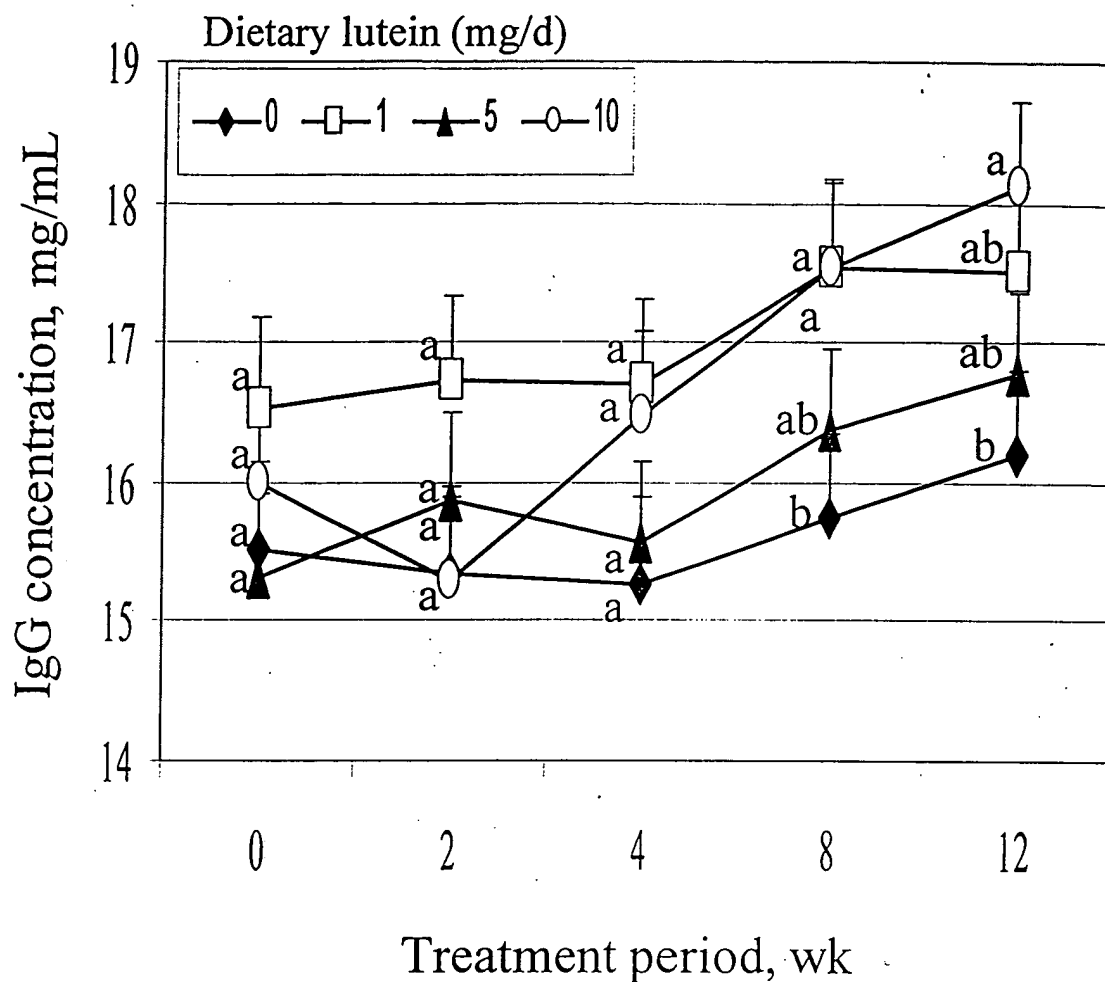


**Figure 15** Percentages (calculated by expressing the number of cells that stained positive for the cell surface marker as a percentage of total number of lymphocytes) of CD3 positive (Total T cells, above) and CD21 positive (B cells, bottom) lymphocytes in cats fed 0, 1, 5, or 10 mg lutein daily for 12 wk. Values are means  $\pm$  SEM ( $n = 14$  cats/diet). Data were analyzed by repeated measures ANOVA. Means within a sampling period with different superscripts differ significantly,  $P < 0.05$ .



**Figure 16** Percentages (calculated by expressing the number of cells that stained positive for surface marker as a percentage of total number of lymphocytes) of CD4+ T-helper (above) and CD8+ T-cytotoxic/suppressor (bottom) lymphocyte subpopulations in cats fed 0, 1, 5, or 10 mg lutein daily for 12 wk. Values are means  $\pm$  SEM ( $n = 14$  cats/diet). Data were analyzed by repeated measures ANOVA. Means within a sampling period with different superscripts differ significantly,  $P < 0.05$ .





**Figure 17** Concentrations of plasma polyclonal IgG in cats fed 0, 1, 5, or 10 mg lutein daily for 12 wk. Values are means  $\pm$  SEM ( $n = 14$  cats/diet). Data were analyzed by repeated measures ANOVA. Means within a sampling period with different superscripts differ significantly,  $P < 0.05$ .